

JC04 Rec'd PCT/PTO 06 FEB 2001

FORM PTO-1390  
REV. 5-93

US DEPARTMENT OF COMMERCE  
PATENT AND TRADEMARK OFFICE

ATTORNEYS DOCKET NUMBER  
P01.0024

**TRANSMITTAL LETTER TO THE UNITED STATES  
DESIGNATED/ELECTED OFFICE (DO/EO/US)  
CONCERNING A FILING UNDER 35 U.S.C. 371**

U.S. APPLICATION NO. (if known, see 37 CFR 1.5)

09762423

INTERNATIONAL APPLICATION NO.  
PCT/DE99/02675

INTERNATIONAL FILING DATE  
26 AUGUST 1999

PRIORITY DATE CLAIMED  
27 AUGUST 1998

TITLE OF INVENTION

**METHOD FOR CONTROLLING THE OFFERING OF AT LEAST ONE ADDITIONAL TRANSMISSION  
CHANNEL AS ACCESS TO A PACKET-SWITCHING NETWORK**

APPLICANT(S) FOR DO/EO/US

**CHRISTIAN PREHOFER**

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
  2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
  3. ☒ This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay.
  4. ☒ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
  5. ☒ A copy of International Application as filed (35 U.S.C. 371(c)(2)) - drawings attached.
    - a. ☒ is transmitted herewith (required only if not transmitted by the International Bureau).
    - b. ☐ has been transmitted by the International Bureau.
    - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US)
  6. ☒ A translation of the International Application into English (35 U.S.C. 371(c)(2)) - drawings attached.
  7. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
    - a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
    - b. ☐ have been transmitted by the International Bureau.
    - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
    - d. ☒ have not been made and will not be made.
  8. ☐ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
  9. ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).
  10. ☐ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).
- Items 11. to 16. below concern other document(s) or information included:
11. ☒ An Information Disclosure Statement under 37 C.F.R. 1.97 and 1.98; (PTO 1449, Prior Art, Search Report, 08 References).
  12. ☒ An assignment document for recording. A separate cover sheet in compliance with 37 C.F.R. 3.28 and 3.31 is included.  
(SEE ATTACHED ENVELOPE)
  13. ☒ Amendment "A" Prior to Action and Appendix "A".
    - ☐ A SECOND or SUBSEQUENT preliminary amendment.
  14. ☒ A substitute specification and substitute specification mark-up.
  15. ☒ A change of address letter attached to the Declaration.
  16. ☒ Other items or information:
    - a. ☒ Request for Approval of Drawing Additions
    - b. ☐ Appointment of Associate Power of Attorney
    - c. ☒ EXPRESS MAIL #EL655300933US dated February 6, 2001

U.S. APPLICATION NO. <b>09/762423</b>		INTERNATIONAL APPLICATION NO. <b>PCT/DE99/02675</b>		ATTORNEY'S DOCKET NUMBER <b>P01,0024</b>	
<b>17. ☒ The following fees are submitted:</b>  <b>BASIC NATIONAL FEE (37 C.F.R. 1.492(a)(1)-(5):</b> Search Report has been prepared by the EPO or JPO ..... \$860.00 International preliminary examination fee paid to USPTO (37 C.F.R. 1.482) .. \$690.00 No international preliminary examination fee paid to USPTO (37 C.F.R. 1.482) but international search fee paid to USPTO (37 C.F.R. 1.445(a)(2) ..... \$710.00 Neither international preliminary examination fee (37 C.F.R. 1.482) nor international search fee (37 C.F.R. 1.445(a)(2) paid to USPTO ..... \$1000.00 International preliminary examination fee paid to USPTO (37 C.F.R. 1.482) and all claims satisfied provisions of PCT Article 33(2)-(4) ..... \$ 100.00  <b>ENTER APPROPRIATE BASIC FEE AMOUNT =</b>				CALCULATIONS	PTO USE ONLY
				\$ 860.00	
Surcharge of \$130.00 for furnishing the oath or declaration later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 C.F.R. 1.492(e)).				\$	
Claims	Number Filed	Number Extra	Rate		
Total Claims	07 - 20 =	0	X \$ 18.00	\$	
Independent Claims	01 - 3 =	0	X \$ 80.00	\$	
Multiple Dependent Claims			\$270.00 +	\$	
<b>TOTAL OF ABOVE CALCULATIONS =</b>				\$ 860.00	
Reduction by 1/2 for filing by small entity, if applicable. Verified Small Entity statement must also be filed. (Note 37 C.F.R. 1.9, 1.27, 1.28)				\$	
<b>SUBTOTAL =</b>				\$ 860.00	
Processing fee of \$130.00 for furnishing the English translation later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(f)).				\$	
<b>TOTAL NATIONAL FEE =</b>				\$ 860.00	
Fee for recording the enclosed assignment (37 C.F.R. 1.21(h). The assignment must be accompanied by an appropriate cover sheet (37 C.F.R. 3.28, 3.31). \$40.00 per property				\$	
<b>TOTAL FEES ENCLOSED =</b>				\$ 860.00	
				Amount to be refunded	\$
				charged	\$

- a. ☒ A check in the amount of \$ 860.00 to cover the above fees is enclosed.
- b. ☐ Please charge my Deposit Account No. \_\_\_\_\_ in the amount of \$ \_\_\_\_\_ to cover the above fees.  
 A duplicate copy of this sheet is enclosed.
- c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any  
 overpayment to Deposit Account No. **50-1519**. **A duplicate copy of this sheet is enclosed.**
- NOTE:** Where an appropriate time limit under 37 C.F.R. 1.494 or 1.495 has not been met, a petition to revive (37 C.F.R. 1.137(a) or (b)) must be  
 filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

**SCHIFF HARDIN & WAITE**  
**PATENT DEPARTMENT**  
**6600 Sears Tower**  
**233 South Wacker Drive**  
**Chicago, Illinois 60606-6473**

Mark Berger  
 SIGNATURE

Mark Berger  
 NAME

45,877  
 Registration Number

**CUSTOMER NUMBER 26574**

26965-0889  
JC04 Rec'd PCT/PTO 0 6 FEB 2001  
09762423

**CERTIFICATE OF MAILING BY EXPRESS MAIL**

**Express Mail Mailing Label Number** EL655300933US

**Date of Deposit:** February 6, 2001

I hereby certify that this correspondence is being deposited with the United States Postal "Express Mail Post Office to Addressee" service under 37 CFR 1.10(c) on the date indicated above and is addressed to:

**BOX PCT  
Assistant Commissioner for Patents  
Washington DC 20231**

**Case Number:** P01,0024  
**Applicant(s):** Christian Prehofer

**International Application No.** PCT/DE99/02675  
**International Filing Date** 26 August 1999  
**Priority Date Claimed** 27 August 1998

**Title:** METHOD FOR CONTROLLING THE OFFERING OF AT LEAST ONE  
ADDITIONAL TRANSMISSION CHANNEL AS ACCESS TO A  
PACKET-SWITCHING NETWORK

**Enclosed are the following documents:**

International application as filed, drawings attached;  
English Translation, drawings attached;

Executed Declaration;  
Change of Address form for Applicants' Representative;

PTO 1390 in duplicate;  
Amendment "A" prior to action and Appendix "A";

Information Disclosure Statement, PTO 1449, Search Report, 08 References;

Appointment of Associate Power of Attorney;

Drawing Additions;

Substitute Specification and Substitute Specification Mark-Up;

Fee: \$860.00;  
Postcard.

(See attached envelope for Executed Assignment;  
PTO 1595; \$40.00 filing fee; Postcard)

*Sharon Jenkins*

Signature of person mailing documents and fees

09762423-022601

BOX PCT  
IN THE UNITED STATES DESIGNATED/ELECTED OFFICE  
OF THE UNITED STATES PATENT AND TRADEMARK OFFICE  
UNDER THE PATENT COOPERATION TREATY--CHAPTER II

**PRELIMINARY AMENDMENT A**  
**PRIOR TO ACTION**

APPLICANT(S): CHRISTIAN PREHOFFER  
ATTORNEY DOCKET NO.: P01,0024  
INTERNATIONAL APPLICATION NO: PCT/DE99/02675  
INTERNATIONAL FILING DATE: 26 AUGUST 1999  
INVENTION: METHOD FOR CONTROLLING THE OFFERING OF  
AT LEAST ONE ADDITIONAL TRANSMISSION  
CHANNEL AS ACCESS TO A PACKET-SWITCHING  
NETWORK

Assistant Commissioner for Patents,  
Washington D.C. 20231

Sir:

Applicants herewith amend the above-referenced PCT application, and request entry of the Amendment prior to examination on the United States Examination Phase.

**IN THE CLAIMS:**

On page 11:

replace line 1 with --WHAT IS CLAIMED IS:--;

Please replace original claims 1-7 with the following rewritten claims 1-7, referring to the mark-ups in Appendix A.

1. (Amended) A method for controlling an offering of at least one additional transmission channel as access to a packet-switching network on which information in the form of data or voice can be transmitted within a line-switching network between an access node connected to said packet-switching network and at least one subscriber terminal device or at least one private branch exchange for the

connection of subscriber terminal devices, said method comprising the steps of:

forwarding, by said access node, information incoming from said line-switching network in a direction toward at least one destination node of said packet-switching network;

communicating, by said access node, information about transmission channels contained in data packets coming from at least one originating node to at least one subscriber terminal device or private branch exchange in a form adapted to line switching;

recognizing, by said access node, data packets separately identified with a traffic information among incoming data packets; and

initiating, by said access node, according to traffic information, said offering of at least one additional transmission channel for connecting with at least one existing transmission channel to form a common transmission link between said access node and at least one subscriber terminal device or private branch exchange.

2. (Amended) The method according to claim 1, further comprising the step of:

producing, by said access node, a release of said at least one additionally offered transmission channel after recognizing an incoming data packet separately identified with a disconnect information.

3. (Amended) The method according to claim 1, further comprising the step of:

providing, by said access node, for a release of said at least one additionally offered transmission channel when no data packets separately identified with a traffic information are received and recognized in the access node within a defined time duration.

4. (Amended) The method according to claim 1, further comprising the step  
of:

providing said traffic information in a bit pattern in a header of a data packet.

5. (Amended) The method according to claim 4, further comprising the step  
of:

providing an indication in said bit pattern of a plurality of transmission  
channels to be additionally offered.

6. (Amended) The method according to claim 1, further comprising the step  
of:

communicating said traffic information by a data packet having an exclusive  
signaling function.

7. (Amended) The method according to claim 1, further comprising the step  
of:


influencing, by a data packet separately identified with a traffic information, a  
charge assessment of said at least one additionally offered transmission channel.

#### **REMARKS**

The present Amendment revises the specification and claims to conform to  
United States patent practice, before examination of the present PCT application in  
the United States National Examination Phase. Pursuant to 37 CFR 1.125 (b),  
applicants have concurrently submitted a substitute specification, excluding the  
claims, and provided a marked-up copy. All of the changes are editorial and  
applicant believes no new matter is added thereby. The amendment, addition,  
and/or cancellation of claims is not intended to be a surrender of any of the subject  
matter of those claims.

Early examination on the merits is respectfully requested.

Submitted by,

 (Reg. No. 45,877)

Mark Bergner  
Schiff Hardin & Waite  
Patent Department  
6600 Sears Tower  
233 South Wacker Drive  
Chicago, Illinois 60606-6473  
(312) 258-5779  
Attorneys for Applicant  
**CUSTOMER NUMBER 26574**

09762423.022601

Appendix A  
Mark Ups for Claim Amendments

This redlined draft, generated by CompareRite (TM) - The Instant Redliner, shows the differences between -

original document : Q:\DOCUMENTS\YEAR 2001\P010024-PREHOFER-  
CONTROLLING TRANSMISSION CHANNEL\ORIGINAL CLAIMS.DOC  
and revised document: Q:\DOCUMENTS\YEAR 2001\P010024-PREHOFER-  
CONTROLLING TRANSMISSION CHANNEL\AMENDED CLAIMS.DOC

CompareRite found 56 change(s) in the text

Deletions appear as Overstrike text surrounded by []  
Additions appear as Bold-Underline text

1. ~~[Method]~~**(Amended) A method** for controlling [the] **an** offering of at least one additional transmission channel as access to a packet-switching network ~~[(PN)]~~ on which information in the form of data ~~[and/or, potentially,]~~ **or** voice can be transmitted within a line-switching network between an access node ~~[(POP)]~~ connected to [the] **said** packet-switching network and at least one subscriber terminal device ~~[(TLN) and/or]~~ **or** at least one private branch exchange for the connection of subscriber terminal devices, ~~[whereby such an]~~ **said method comprising the steps of:**

**forwarding, by said** access node ~~[forwards such,]~~ information incoming from [the] **said** line-switching network in [the] **a** direction toward at least one destination node ~~[(UZ)]~~ of [the] **said** packet-switching network ~~[and also communicates such;]~~ **communicating, by said access node,** information about [such] transmission channels contained in data packets coming from at least one originating node ~~[(UZ)]~~ to at least one ~~[such]~~ subscriber terminal device ~~[and/or]~~ **or** private branch exchange in a form adapted to [the] line switching~~], characterized in that the;~~

**recognizing, by said** access node ~~[recognizes,]~~ data packets separately identified with a traffic information among incoming data packets~~[- and];~~ **and**

**initiating, by said access node,** according to [the] traffic information, ~~[initiates the]~~ **said** offering of at least one additional transmission channel for [the]



purpose of a connection] **connecting** with at least one existing transmission channel to form a common transmission link between [the] **said** access node and at least one [such] subscriber terminal device or [respectively] private branch exchange.

5           2. [Method](**Amended**) **The method** according to claim 1, [characterized in that the] **further comprising the step of:**

**producing, by said** access node [can produce], a release of **said** at least one [such] additionally offered transmission channel after recognizing an incoming data packet separately identified with a disconnect information.

10           3. [Method](**Amended**) **The method** according to claim 1, [characterized in that the] **further comprising the step of:**

**providing, by said** access node [can occasion], for a release of **said** at least one [such] additionally offered transmission channel when no data packets separately identified with a traffic information are received and recognized in the access node within a defined time duration.

15           4. [Method](**Amended**) **The method** according to [one of the preceding claims, characterized in that such] **claim 1, further comprising the step of:**

20           **providing said** traffic information [is contained] in a bit pattern in [the] **a** header of [such] a data packet.

25           5. [Method](**Amended**) **The method** according to claim 4, [characterized in that such a] **further comprising the step of:**

**providing an indication in said** bit pattern [indicates the] **of a** plurality of transmission channels to be additionally offered.

6. ~~[Method]~~**(Amended) The method** according to ~~[one of the claims 1 through 3, characterized in that such a]~~ **claim 1, further comprising the step of: communicating said** traffic information ~~[can be communicated]~~ by a data packet having ~~an~~ exclusive ~~[signalling]~~ **signaling** function.

7. ~~[Method]~~**(Amended) The method** according to ~~[one of the preceding claims, characterized in that]~~ **claim 1, further comprising the step of: influencing, by** a data packet separately identified with a traffic information ~~[can influence the], a~~ charge assessment of ~~[the]~~ **said at least one** additionally offered transmission ~~[channels]~~ **channel**.

BOX PCT  
IN THE UNITED STATES DESIGNATED/ELECTED OFFICE  
OF THE UNITED STATES PATENT AND TRADEMARK OFFICE  
UNDER THE PATENT COOPERATION TREATY--CHAPTER II

APPLICANT(S): CHRISTIAN PREHOFER  
ATTORNEY DOCKET NO.: P01,0024  
INTERNATIONAL APPLICATION NO: PCT/DE99/02675  
INTERNATIONAL FILING DATE: 26 AUGUST 1999  
INVENTION: METHOD FOR CONTROLLING THE OFFERING OF AT  
LEAST ONE ADDITIONAL TRANSMISSION CHANNEL AS  
ACCESS TO A PACKET-SWITCHING NETWORK

Assistant Commissioner for Patents,  
Washington, D.C. 20231

**REQUEST FOR APPROVAL OF DRAWING ADDITIONS**

Sir:

Enclosed is one sheet of drawings, Single Figure, showing in red,  
the addition of labels to the elements depicted therein. Approval of the  
additions is respectfully requested.

Submitted by,

 (Reg. No. 45,877)  
Mark Bergner  
SCHIFF HARDIN & WAITE  
PATENT DEPARTMENT  
6600 Sears Tower  
Chicago, Illinois 60606-6473  
(312) 258-5779  
Attorney for Applicant(s)

**CUSTOMER NUMBER 26574**

09762423-022601

09/762423

JC02 Rec'd PCT/PTO 06 FEB 2001

Siemens AG  
New PCT application  
26965-0870 (P-01,0024)  
1998P02421WOUS  
Inventor: Prehofer

Translation / January 26, 2001 / 1696(911) / 3700 words

09762423-02601

**METHOD FOR CONTROLLING THE OFFERING OF AT LEAST ONE  
ADDITIONAL TRANSMISSION CHANNEL AS ACCESS TO A PACKET-  
SWITCHING NETWORK**

The invention is directed to a method for controlling the offering of at  
5 least one additional transmission channel as access to a packet-switching network  
according to the preamble of patent claim 1.

In accord therewith, the following, known network constellation forms the  
basis, this being shown, for example, on page 7 of a customer brochure "EWSD goes  
Internet" of Siemens AG, published in 1997 as matter number A50001-N2-P65-2-  
10 7600.

A subscriber of a traditional line-switching telephone network who would  
like to use services of a packet-switching network, for example of the Internet,  
receives access to the packet-switching network in that he dials in to the packet-  
switching network at an access node connected to the digital telephone switching  
15 center using his subscriber terminal device, for example a personal computer or,  
respectively, a telephone set that is connected to a digital telephone switching center  
either directly or indirectly via a private branch exchange, and sets up a connection to  
a destination node of the packet-switching network, for example a computer of a  
service vendor with, for example, the assistance of a browser and also requests  
20 services from such a computer.

Requested services such as, for example, video on demand, voice over IP  
or video conference circuits require a high a guaranteed transmission bandwidth as  
well as insignificant delay.

With respect to the Internet, two approaches under the names "Integrated  
25 Services" and "Differentiated Services" are currently under discussion, these  
guaranteeing the required transmission bandwidth and little delay in the transmission  
of the data belonging to such services.

The first approach, "Integrated Services", is supported on an IP signalling  
protocol, for example RSVP (resource reservation protocol; "RFC Document No.  
30 RFC 2205, authored by R. Braden, L. Zhang, S. Berson, S. Herzog, S. Jamin,

published by the Internet Engineering Task Force in September 1997, Internet page: <http://info.internet.isi.edu:80/in-notes/rfc/files/rfc2205.txt>. In accord therewith, a connection is set up between an originating and, respectively, a destination node of the Internet by an exchange of data packets with exclusive signalling function, and the transmission bandwidth between the originating and the destination node is defined, in particular, for the payload packets of a requested service. This connection can be cleared down by data packets having an exclusive signalling function. Alternatively thereto, the connection can be ended when no data packets with exclusive signalling function that are responsible for maintaining the connection are transmitted between the originating and destination node for a defined time duration.

The second approach, "Differentiated Services" ("Internet Draft" document, authored by K. Nichols and S. Blake, published by the Internet Engineering Task Force in February 1998, Internet page: <http://www.ietf.org/internet-draft/draft-nichols-dsodef-00.txt>), proposes a method that enables an accelerated transmission of data packets from an originating node to a destination node. Respectively specific bits of what is referred to as the TOS byte are set in the header of the data packets for data packets that belong to a service requesting a high transmission bandwidth. According to the bits set in the TOS byte, the data packets are handled with priority in the transit nodes via which such data packets are transmitted from the originating to the destination node, as a result whereof, in particular, an accelerated forwarding to the next transit or destination node is achieved, i.e. nearly without delay.

With respect to the line-switching (telephone) network, there are currently various possibilities for increasing the transmission bandwidth on the transmission link between an access node and a subscriber terminal device, this currently amounting to a maximum of 56 kbit/s given an analog subscriber terminal and 64 kbit/s given an ISDN subscriber terminal without channel bundling.

One possibility for achieving a higher transmission bandwidth for such services is what is referred to as the multi-link PPP protocol ("RFC-Document" No. RFC 1990, authored by K. Sklower, B. Lloyd, G. McGregor, D. Carr and T. Coradetti, published by the Internet Engineering Task Force in August 1996, Internet

09762423.022601

page: <http://info.internet.isi.edu:80/in-notes/rfc/files/rfc1990.txt>), which represents an expansion of the PPP protocol that controls the communication between an access node to the Internet and a subscriber terminal device. Assuming that a plurality of connections via a plurality of transmission channels (for example, given an ISDN  
5 basic access: 2 B-channels at 64 kbit/s and 1 D-channel at 16 kbit/s or, given an ISDN primary multiplex access, 30 B-channels and 1 D-channel at 64 kbit/s each) can be set up from such an access node to a subscriber terminal device, an offering of additional transmission channels for a transmission link in common with the already existing transmission channel produces a connection with an enhanced transmission  
10 bandwidth (of, for example, 128 kbit/s given an ISDN basic access or, respectively, of approximately 2 Mbit/s given an ISDN primary multiplex access) between the subscriber terminal device and the access node.

In this method, however, only the subscriber can decide about the offering and the release of such transmission channels. As a result thereof, this procedure is  
15 very static. Moreover, the subscriber incurs higher charges due to the offering of at least one additional transmission channel, regardless of whether an additional transmission channel is needed for increasing the transmission bandwidth or not.

Another approach for controlling such an offering and release of additional transmission channels is realized with what is referred to as the "Always  
20 On/Dynamic ISDN" technique (AO/DI) (for example, Technical Memo: "Always On/Dynamic ISDN", authored by A. Kuzma, published in October 1997, Vendors' ISDN Association Inc., 2694 Bishop Drive, Suite 105, San Ramon, CA 94583). This method provides that a plurality of B-channels are interconnected upon employment of the multi-link PPP protocol in ISDN. A narrowband, permanent virtual connection  
25 with, for example, 9.6 kbit/s transmission bandwidth to the Internet is offered via a D-channel, the transmission bandwidth thereof being capable of being expanded as needed by the addition of B-channels (for example, 128 kbit/s given an ISDN basic access).

The AO/DI technique uses what is referred to as the BAP/BACP protocol  
30 ("RFC Document" Number RFC 2125, authored by C. Richards and K. Smith, published by the Internet Engineering Task Force in March 1997, Internet page:

097524323.022601  
109220.22252601

<http://info.internet.isi.edu:80/in-notes/rfc/files/rfc2125.txt>) in order to enable the communication with respect to the offering and release of such transmission channels between a subscriber terminal device and the access node to the Internet. For example, an ISDN subscriber would like to use a B-channel that is already occupied with data belonging to a requested service for telephoning. The control of the offering and release of such a transmission channel is thereby dependent on actions of the subscriber.

The critical disadvantage of such a control exclusively dependent on the actions of the subscriber has already been presented above.

Moreover, the offering or, respectively, release of transmission channels with the assistance of the AO/DI technique is dependent on certain traffic parameters. For example, additional transmission channels can thus be offered when there is a high volume of data to be transmitted in the access node. Conversely, transmission channels are in turn released given a low traffic volume in the access node.

Since the data packets are transmitted connectionless in a packet-switching network such as, for example, the Internet, i.e. the data packets belonging to a connection are communicated independently of one another, without sequence guarantee and without reception confirmation, the traffic volume in such an access node fluctuates greatly and is therefore difficult to estimate. There is thereby the risk that, given a low traffic volume in the access node, the transmission channels additionally offered for a connection are undesirably released and data packets are therefore lost. For example, an unwanted release of additionally offered transmission channels occurs when both subscribers in an Internet voice connection (voice over IP) between two subscribers happen not to talk for a couple of seconds.

The AO/DI technique thus leads to an uncontrolled adaptation of the transmission bandwidth that is made available by offering or, respectively, releasing additional transmission channels for the transmission of the data belonging to a service requested by the subscriber.

Moreover, the permanently existing connection to the access node via the D-channel is unfavorable and not only for cost reasons. This connection leads to a



low transmission bandwidth available to the signalling traffic, so that a massive data backup can arise given an increased signalling traffic volume.

The object of the invention is comprised in fashioning a method of the species indicated in the preamble of patent claim 1 to the effect that the offering of  
5 additional transmission channels is controlled optimally dynamically and controlled as well as optimally cost-beneficial at the same time.

This object is achieved by the features recited in the characterizing part of claim 1.

The principle underlying the invention is comprised therein that the access  
10 node recognizes data packets separately identified with a traffic information among all incoming data packets. Those data packets that belong to a service requested by the subscriber for which an increased transmission bandwidth is required are thereby separately identified with a traffic information. According to the traffic information, the access node initiates the offering of at least one additional transmission channel  
15 for the purpose of a connection with at least one already existing transmission channel to form a common transmission link between the access node and at least one such subscriber terminal device or, respectively, private branch exchange.

The invention is particularly distinguished by a completely controlled dynamic control of the offering of an adequate number of transmission channels.  
20 Inventively, the offering of at least one additional transmission channel is made dependent of the transmission bandwidth that is required for a requested service and that is contained in the traffic information. Actions on the part of a subscriber that control the offering of at least one additional transmission channel are not necessary. Moreover, such a dynamic control controlled by the traffic information minimizes the  
25 charges incurred by the offering of at least one such additional transmission channel and billed to the subscriber requesting the service.

Further developments of the invention are characterized in subclaims.

An advantageous development of the invention relates to the release of at least one such additional transmission channel. The access node can produce such a  
30 release after recognizing an incoming data packet separately identified with a disconnect information. The explicit signalling of the release of at least one such

09752423-022601

additional transmission channel in the form of a disconnect information prevents the unwanted termination of the offering of at least one such additional transmission channel.

5 An alternative development of the invention provides that the access node can produce a release of at least one such additionally offered transmission channel when no data packets separately identified with a traffic information are received and recognized in the access node within a predetermined time duration. As a result thereof, the end of such an offering of at least one such additional transmission channel can be assured with little implementation outlay.

10 According to a useful development of the invention, such a traffic information is contained in a bit pattern in the header of such a data packet. As a result thereof, the data packets can be designationally and, thus, quickly investigated for such a traffic information.

15 Another development of the invention that is advantageous in this context provides that such a bit pattern communicates the plurality of transmission channels to be additionally offered. In this way, the access node is relieved of the decision about the plurality of additionally required transmission channels to be made on the basis of the bit pattern.

20 Alternatively to the aforementioned development, such a traffic information can be communicated by a data packet having only a signalling function. This is particularly advantageous because additional transmission channels can already be offered after the arrival thereof in the access node before payload packets are transmitted.

25 Another advantageous development of the invention is comprised therein that a data packet separately identified with a traffic information can influence the charge calculation of the additionally offered transmission channels. In this way, the charges that are incurred with the offering of such additional transmission channels are not automatically billed to the subscriber.

30 An exemplary embodiment of the invention is described in greater detail below with reference to a drawing.

03762423.022501

The Figure shows an exemplary network constellation to which the inventive method can be applied.

In accord therewith, subscriber terminal devices TLN, for example a telephone set or personal computer, are connected via a subscriber line to a line-switching network, normally the public telephone network. Such subscriber terminal devices can also be connected to a private branch exchange that has a connection to the line-switching network. There is at least one digital telephone switching center VST in the line-switching network, at least one access node POP to the packet-switching network PN being connected thereto. Such an access node can also be integrated into a digital telephone switching center. Within the packet-switching network PN, an originating or, respectively, destination node UZ -- dependent on the view of the transmission direction -- is indicated, this being in communication with the access node either directly or via a transit node (not shown in the Figure). For example, such an originating or, respectively, destination node indicates a computer of a service vendor. In order to set up a connection between the subscriber terminal devices and the access node, it is conceivable to offer a plurality of transmission channels.

The following scenarios can be imagined according to the inventive method:

A subscriber who has set up a connection via the digital telephone switching center in the line-switching network and via the access node to a destination node UZ, for example a computer of a service vendor of the packet-switching network, for example the Internet, requests a service requiring a guaranteed, high transmission bandwidth. The computer of the service vendor sends a data packet with exclusive signalling function to the subscriber terminal device, said data packet containing a reservation offer, preferably according to the initially cited RSVP protocol. Upon initiation of the subscriber or of an application program used by the subscriber, the subscriber terminal device sends a data packet with exclusive signalling function back in the direction to the computer of the service vendor, said data packet containing a traffic information in the form of a reservation for, for example, 80 kbit/s. When this data packet arrives in the access node and is recognized by the access node, the access node interprets the

09762423.022601

traffic information of the data packet and forwards the data packet to the computer of the service vendor. The access node initiates the offering of at least one further transmission channel for the purpose of a connection with the already existing transmission channel to form a common transmission link between the access node  
5 and the subscriber terminal device. The data belonging to the requested service can now be transmitted on at least two transmission channels between the subscriber terminal device and the access node. Dependent on the content of the traffic information, one additional B-channel can be offered in the case of an ISDN basic access and up to 30 B-channels can be offered given an ISDN primary multiplex  
10 access.

Alternatively thereto, the offering of at least one additional transmission channel, for example in the form of a B-channel, can wait to be initiated until the payload packets belonging to the requested service arrive in the access node.

A release of at least one such additionally offered transmission channel is  
15 produced by the access node when data packets having an exclusive signalling function and provided with disconnect information that have been sent either by the subscriber terminal device or by the computer of the service vendor arrive in the access node and are recognized by it.

Another possibility for releasing such an additional transmission channel  
20 is comprised therein that the access node initiates such a release when no data packets identified with a traffic information intended for maintaining the additionally offered transmission channel are received and recognized in the access node within a predetermined time duration.

Alternatively to the above-described scenario, the following scenario is  
25 also conceivable.

After a subscriber has requested a service with high transmission bandwidth at the computer of a service vendor, the computer sends the payload packets belonging to this service in the direction toward the subscriber terminal device, said payload packets being identified with a traffic information in the form of  
30 a bit pattern in the header that corresponds to the requested transmission bandwidth. Such a bit pattern can preferably be located in the initially cited TOS byte. The value

of such a bit pattern thereby corresponds to the required transmission bandwidth and/or to the plurality of transmission channels to be additionally offered. After the arrival and recognition of such identified data packets in the access node, the access node initiates the offering of at least one further transmission channel. The access  
5 node produces the release of at least one such additionally offered transmission channels [sic] when no data packets identified with such a traffic information arrive at and are recognized in the access node within a defined time duration.

The above-described scenarios are to be viewed not only in isolation. On the contrary, the can be combined with one another. For example, a subscriber would  
10 like to request a plurality of services simultaneously from the computers of the service vendors. The offering of an additional transmission channel for the data of a first requested service can, for example, be occasioned by the data packets with exclusive signalling function mentioned in the first scenario. For another requested service, an additional transmission channel can be offered on the basis of the payload packet  
15 mentioned in the second scenario that is identified with a traffic information. The decision about how many additional transmission channels are made available occurs either on the basis of a separate evaluation of the traffic information in a data packet with exclusive signalling function and the traffic information in the header of a payload packet or on the basis of a evaluation in common of all traffic information  
20 available in the access node.

Further, the inventive method can run parallel to further methods, preferably the initially cited multi-link protocol or the AO/DI technique, or can be combined with them analogous to that set forth above. In particular, the inventive method does not preclude that an action by a subscriber triggers the offering of at least  
25 one additional transmission channel or the release of at least one such channel. This applies, for example, when a subscriber would like to use a transmission channel that is already occupied for the transmission of data belonging to a requested service for telephoning.

Further, the data packets separately identified with a traffic information  
30 can influence the charge assessment of the additionally offered transmission channels. Instead of billing the subscriber that requests a service for the charges of the

additionally offered transmission channel, another party, for example the service vendor, can partly or entirely assume the charges.

09762423.022601

**Patent Claims**

1. Method for controlling the offering of at least one additional transmission channel as access to a packet-switching network (PN) on which information in the form of data and/or, potentially, voice can be transmitted within a line-switching network between an access node (POP) connected to the packet-switching network and at least one subscriber terminal device (TLN) and/or at least one private branch exchange for the connection of subscriber terminal devices, whereby such an access node forwards such information incoming from the line-switching network in the direction toward at least one destination node (UZ) of the packet-switching network and also communicates such information about such transmission channels contained in data packets coming from at least one originating node (UZ) to at least one such subscriber terminal device and/or private branch exchange in a form adapted to the line switching, characterized in that the access node recognizes data packets separately identified with a traffic information among incoming data packets, and, according to the traffic information, initiates the offering of at least one additional transmission channel for the purpose of a connection with at least one existing transmission channel to form a common transmission link between the access node and at least one such subscriber terminal device or, respectively, private branch exchange.

2. Method according to claim 1, characterized in that the access node can produce a release of at least one such additionally offered transmission channel after recognizing an incoming data packet separately identified with a disconnect information.

3. Method according to claim 1, characterized in that the access node can occasion a release of at least one such additionally offered transmission channel when no data packets separately identified with a traffic information are received and recognized in the access node within a defined time duration.

4. Method according to one of the preceding claims, characterized in that such traffic information is contained in a bit pattern in the header of such a data packet.

5. Method according to claim 4, characterized in that such a bit pattern indicates the plurality of transmission channels to be additionally offered.

6. Method according to one of the claims 1 through 3, characterized in that such a traffic information can be communicated by a data packet having exclusive  
5 signalling function.

7. Method according to one of the preceding claims, characterized in that a data packet separately identified with a traffic information can influence the charge assessment of the additionally offered transmission channels.

09762423.022601

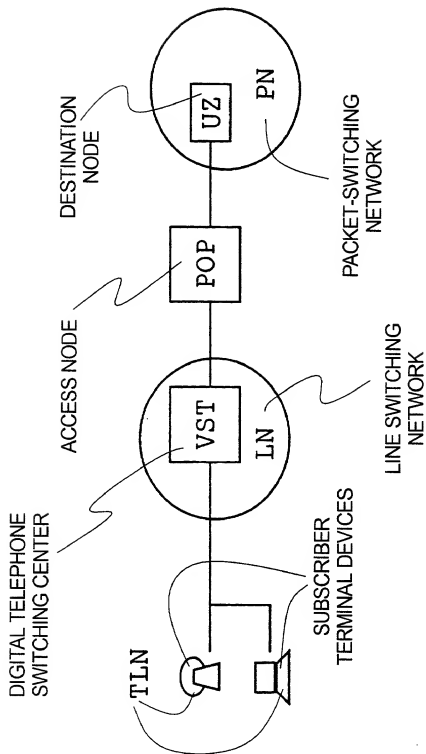


**Abstract****METHOD FOR CONTROLLING THE OFFERING OF AT LEAST ONE  
ADDITIONAL TRANSMISSION CHANNEL AS ACCESS TO A PACKET-  
SWITCHING NETWORK**

- 5           An access node (POP) to the packet-switching network (PN) that is  
connected to a digital telephone switching center (VST) of a line-switching network  
(LN) recognizes the data packets separately identified with a traffic information  
among the incoming data packets. In conformity with the traffic information, it  
initiates the offering of at least one additional transmission channel for the  
10       purpose of a connection with at least one existing transmission channel to form a  
common transmission link between the access node and at least one such subscriber  
terminal device or, respectively, private branch exchange.

Figure

09762423.022601



1/PRTS

09/762423

JC02 Rec'd PCT/PTO 06 FEB 2001

SPECIFICATION

TITLE

METHOD FOR CONTROLLING THE OFFERING OF AT LEAST ONE ADDITIONAL  
TRANSMISSION CHANNEL AS ACCESS TO A PACKET-SWITCHING NETWORK

5

BACKGROUND OF THE INVENTION

Field of the Invention

The invention is directed to a method for controlling the offering of at least one additional transmission channel as access to a packet-switching network on which information in the form of data or voice can be transmitted within a line-switching network between an access node connected to the packet-switching network and at least one subscriber terminal device or at least one private branch exchange for the connection of subscriber terminal devices.

10

15

Description of the Related Art

The above method is based on the following, known network constellation, which is shown, for example, on page 7 of a customer brochure "EWSD goes Internet" of Siemens AG, published in 1997 as matter number A50001-N2-P65-2-7600.

20

A subscriber of a traditional line-switching telephone network who would like to use services of a packet-switching network (for example, of the Internet) receives access to the packet-switching network in that he dials in to the packet-switching network at an access node connected to the digital telephone switching center using his subscriber terminal device (for example, a personal computer or a telephone set that is connected to a digital telephone switching center either directly or indirectly via a private branch exchange) and sets up a connection to a destination node of the packet-switching network, for example, a computer of a service vendor with, for example, the assistance of a browser, at which the user also requests services from such a computer.

25

30

Requested services such as video on demand, voice over IP, or video conference circuits require a high a guaranteed transmission bandwidth as well as

09/762423.02/601

insignificant delay. With respect to the Internet, two approaches under the names "Integrated Services" and "Differentiated Services" are currently under discussion, these guaranteeing the required transmission bandwidth and little delay in the transmission of the data belonging to such services.

5       The first approach, "Integrated Services", is supported on an IP signaling protocol, for example, RSVP (resource reservation protocol; ARFC Document No. RFC 2205, authored by R. Braden, L. Zhang, S. Berson, S. Herzog, S. Jamin, published by the Internet Engineering Task Force in September 1997, available on-line at Internet page: <http://info.internet.isi.edu:80/in-notes/rfc/files/rfc2205.txt>).

10       According to this approach, a connection is set up between an originating and a destination node of the Internet by an exchange of data packets with an exclusive signaling function, and the transmission bandwidth between the originating and the destination node is defined, particularly for the payload packets of a requested service. This connection can in turn be cleared down by data packets having an exclusive signaling function. Alternately, the connection can be ended when no data  
15       packets with an exclusive signaling function that are responsible for maintaining the connection are transmitted between the originating and destination node for a defined time duration.

20       The second approach, "Differentiated Services" ("Internet Draft" document, authored by K. Nichols and S. Blake, published by the Internet Engineering Task Force in February 1998, available on-line at Internet page: <http://www.ietf.org/internet-draft/draft-nichols-dsodef-00.txt>), proposes a method that enables an accelerated transmission of data packets from an originating node to a destination node. Specific bits of the "TOS byte" are set in the header of the data  
25       packets for data packets that belong to a service requesting a high transmission bandwidth. According to the bits set in the TOS byte, the data packets are handled with priority in the transit nodes via which such data packets are transmitted from the originating to the destination node, resulting in an accelerated forwarding to the next transit or destination node being achieved, i.e., with very little delay.

30       With respect to the line-switching (telephone) network, there are currently various possibilities for increasing the transmission bandwidth on the transmission

link between an access node and a subscriber terminal device, this currently amounting to a maximum of 56 kbit/s given an analog subscriber terminal and 64 kbit/s given an ISDN subscriber terminal without channel bundling.

One possibility for achieving a higher transmission bandwidth for such services is the "multi-link PPP" protocol ("RFC-Document" No. RFC 1990, authored by K. Sklower, B. Lloyd, G. McGregor, D. Carr and T. Coradetti, published by the Internet Engineering Task Force in August 1996, available on-line at Internet page: <http://info.internet.isi.edu:80/in-notes/rfc/files/rfc1990.txt>), which represents an expansion of the PPP protocol that controls the communication between an access node to the Internet and a subscriber terminal device. Assuming that a plurality of connections via a plurality of transmission channels (for example, given an ISDN basic access: 2 B-channels at 64 kbit/s and 1 D-channel at 16 kbit/s or, given an ISDN primary multiplex access, 30 B-channels and 1 D-channel at 64 kbit/s each) can be set up from such an access node to a subscriber terminal device, an offering of additional transmission channels for a transmission link in common with the already existing transmission channel produces a connection with an enhanced transmission bandwidth (of, for example, 128 kbit/s given an ISDN basic access or of approximately 2 Mbit/s given an ISDN primary multiplex access) between the subscriber terminal device and the access node.

In this method, however, only the subscriber can decide about the offering and the release of such transmission channels, resulting in a very static procedure. Moreover, the subscriber incurs higher charges due to the offering of at least one additional transmission channel, regardless of whether an additional transmission channel is needed for increasing the transmission bandwidth or not.

Another approach for controlling such an offering and release of additional transmission channels is realized with the "Always On/Dynamic ISDN" technique (AO/DI) (for example, Technical Memo: "Always On/Dynamic ISDN", authored by A. Kuzma, published in October 1997, Vendors' ISDN Association Inc., 2694 Bishop Drive, Suite 105, San Ramon, CA 94583). This method provides that a plurality of B-channels are interconnected upon employment of the multi-link PPP protocol in ISDN. A narrowband, permanent virtual connection with, for example, 9.6 kbit/s

00762403.022601

transmission bandwidth to the Internet is offered via a D-channel, its transmission bandwidth capable of being expanded as needed by the addition of B-channels (for example, 128 kbit/s given an ISDN basic access).

The AO/DI technique uses the "BAP/BACP" protocol ("RFC Document" Number RFC 2125, authored by C. Richards and K. Smith, published by the Internet Engineering Task Force in March 1997, available on-line at Internet page: <http://info.internet.isi.edu:80/in-notes/rfc/files/rfc2125.txt>) in order to enable the communication with respect to the offering and release of such transmission channels between a subscriber terminal device and the access node to the Internet. For example, an ISDN subscriber would like to use a B-channel that is already occupied with data belonging to a requested service for telephoning. The control of the offering and release of such a transmission channel is dependent on actions of the subscriber.

The critical disadvantage of such a control exclusively dependent on the actions of the subscriber has been presented above. Moreover, the offering or release of transmission channels with the assistance of the AO/DI technique is dependent on certain traffic parameters. For example, additional transmission channels can thus be offered when there is a high volume of data to be transmitted in the access node. Conversely, transmission channels are in turn released given a low traffic volume in the access node.

Since the data packets are transmitted connectionless in a packet-switching network such as, for example, the Internet (i.e., the data packets belonging to a connection are communicated independently of one another, without a sequence guarantee and without reception confirmation), the traffic volume in such an access node fluctuates greatly and is therefore difficult to estimate. There is a risk that, given a low traffic volume in the access node, the transmission channels additionally offered for a connection are undesirably released and data packets are lost. For example, an unwanted release of additionally offered transmission channels occurs when both subscribers in an Internet voice connection (voice over IP) between two subscribers happen to not talk for a couple of seconds.

10762423.022601

The AO/DI technique thus leads to an uncontrolled adaptation of the transmission bandwidth that is made available by offering or releasing additional transmission channels for the transmission of the data belonging to a service requested by the subscriber. Moreover, the permanently existing connection to the access node via the D-channel is unfavorable for cost and other reasons. This connection leads to a low transmission bandwidth available to the signaling traffic so that a massive data backup can arise given an increased signaling traffic volume.

#### SUMMARY OF THE INVENTION

The object of the invention is achieved by a method for controlling an offering of at least one additional transmission channel as access to a packet-switching network on which information in the form of data or voice can be transmitted within a line-switching network between an access node connected to the packet-switching network and at least one subscriber terminal device or at least one private branch exchange for the connection of subscriber terminal devices, the method comprising the steps of: forwarding, by the access node, information incoming from the line-switching network in a direction toward at least one destination node of the packet-switching network; communicating, by the access node, information about transmission channels contained in data packets coming from at least one originating node to at least one subscriber terminal device or private branch exchange in a form adapted to line switching; recognizing, by the access node, data packets separately identified with a traffic information among incoming data packets; and initiating, by the access node, according to traffic information, the offering of at least one additional transmission channel for connecting with at least one existing transmission channel to form a common transmission link between the access node and at least one subscriber terminal device or private branch exchange.

The invention is based on the principle that the access node recognizes data packets separately identified with a traffic information among all incoming data packets. Those data packets that belong to a service requested by the subscriber for which an increased transmission bandwidth is required are separately identified with a traffic information. According to the traffic information, the access node

initiates the offering of at least one additional transmission channel for the purpose of a connection with at least one already existing transmission channel to form a common transmission link between the access node and at least one such subscriber terminal device or private branch exchange.

5 The invention is particularly distinguished by a completely controlled dynamic control of the offering of an adequate number of transmission channels. Inventively, the offering of at least one additional transmission channel is made dependent of the transmission bandwidth that is required for a requested service and that is contained in the traffic information. Actions on the part of a subscriber that control the offering  
10 of at least one additional transmission channel are not necessary. Moreover, such a dynamic control controlled by the traffic information minimizes the charges incurred by the offering of at least one such additional transmission channel and billed to the subscriber requesting the service.

Further developments of the invention are as follows. The inventive method  
15 may further comprise the step of producing, by said access node, a release of said at least one additionally offered transmission channel after recognizing an incoming data packet separately identified with a disconnect information. It may also comprise the step of providing, by said access node, for a release of said at least one additionally offered transmission channel when no data packets separately  
20 identified with a traffic information are received and recognized in the access node within a defined time duration. The traffic information may be provided in a bit pattern in a header of a data packet, and this bit pattern may include an indication of a plurality of transmission channels to be additionally offered. The traffic information may be communicated in a data packet having an exclusive signaling function.

25 Finally, the inventive method may influence, by a data packet separately identified with a traffic information, a charge assessment of said at least one additionally offered transmission channel. These developments are described in greater detail below.

An advantageous development of the invention relates to the release of at  
30 least one such additional transmission channel. The access node can produce such a release after recognizing an incoming data packet separately identified with a



disconnect information. The explicit signaling of the release of at least one such additional transmission channel in the form of a disconnect information prevents the unwanted termination of the offering of at least one such additional transmission channel.

5 An alternative development of the invention provides that the access node can produce a release of at least one such additionally offered transmission channel when no data packets separately identified with a traffic information are received and recognized in the access node within a predetermined time duration, resulting in an assurance of the end of such an offering of at least one such additional transmission  
10 channel with little implementation outlay.

According to a useful development of the invention, such a traffic information is contained in a bit pattern in the header of such a data packet. As a result of this, the data packets can be designationally and, thus, quickly investigated for such a traffic information.

15 Another development of the invention that is advantageous in this context provides that such a bit pattern communicates the plurality of transmission channels to be additionally offered. In this way, the access node is relieved of the decision about the plurality of additionally required transmission channels to be made on the basis of the bit pattern.

20 Alternatively to the previously mentioned development, such a traffic information can be communicated by a data packet having only a signaling function. This is particularly advantageous because additional transmission channels can already be offered after its arrival in the access node before payload packets are transmitted.

25 Another advantageous development of the invention that a data packet separately identified with a traffic information can influence the charge calculation of the additionally offered transmission channels. In this way, the charges that are incurred with the offering of such additional transmission channels are not automatically billed to the subscriber.

## BRIEF DESCRIPTION OF THE DRAWINGS

An exemplary embodiment of the invention is described in greater detail below with reference to the drawing.

The Figure is a block diagram of an exemplary network constellation to which the inventive method can be applied.

## DESCRIPTION OF THE PREFERRED EMBODIMENTS

According to the invention, subscriber terminal devices TLN (for example, a telephone set or personal computer) are connected via a subscriber line to a line-switching network, normally the public telephone network. Such subscriber terminal devices can also be connected to a private branch exchange that has a connection to the line-switching network. There is at least one digital telephone switching center VST in the line-switching network, at least one access node POP to the packet-switching network PN connected to it. Such an access node can also be integrated into a digital telephone switching center. Within the packet-switching network PN, an originating or destination node UZ -- dependent on the view of the transmission direction -- is indicated, this being in communication with the access node either directly or via a transit node (not shown in the Figure). For example, such an originating or destination node indicates a computer of a service vendor. In order to set up a connection between the subscriber terminal devices and the access node, it is conceivable to offer a plurality of transmission channels.

The following scenarios can be imagined according to the inventive method:

A subscriber who has set up a connection via the digital telephone switching center in the line-switching network and via the access node to a destination node UZ (for example, a computer of a service vendor of the packet-switching network, e.g., the Internet) requests a service requiring a guaranteed, high transmission bandwidth. The computer of the service vendor sends a data packet with an exclusive signaling function to the subscriber terminal device, the data packet containing a reservation offer, preferably according to the initially cited RSVP protocol. Upon initiation of the subscriber or of an application program used by the subscriber, the subscriber terminal device sends a data packet with the exclusive

signaling function back in the direction to the computer of the service vendor, this data packet containing a traffic information in the form of a reservation for, for example, 80 kbit/s. When this data packet arrives in the access node and is recognized by the access node, the access node interprets the traffic information of the data packet and forwards the data packet to the computer of the service vendor.

The access node initiates the offering of at least one further transmission channel for the purpose of a connection with the already existing transmission channel to form a common transmission link between the access node and the subscriber terminal device. The data belonging to the requested service can now be transmitted on at least two transmission channels between the subscriber terminal device and the access node. Depending on the content of the traffic information, one additional B-channel can be offered in the case of an ISDN basic access and up to 30 B-channels can be offered given an ISDN primary multiplex access.

Alternately, the offering of at least one additional transmission channel, for example in the form of a B-channel, can wait to be initiated until the payload packets belonging to the requested service arrive in the access node.

A release of at least one such additionally offered transmission channel is produced by the access node when data packets, having an exclusive signaling function and provided with disconnect information that have been sent either by the subscriber terminal device or by the computer of the service vendor, arrive in the access node and are recognized by it. Another possibility for releasing such an additional transmission channel is to have the access node initiate such a release when no data packets identified with a traffic information intended for maintaining the additionally offered transmission channel are received and recognized in the access node within a predetermined time duration.

Alternately, the following scenario is also conceivable.

After a subscriber has requested a service with a high transmission bandwidth at the computer of a service vendor, the computer sends the payload packets belonging to this service in the direction toward the subscriber terminal device, these payload packets being identified with a traffic information in the form of a bit pattern in the header that corresponds to the requested transmission

bandwidth. Such a bit pattern can preferably be located in the previously cited TOS byte. The value of such a bit pattern corresponds to the required transmission bandwidth and/or to the plurality of transmission channels to be additionally offered. After the arrival and recognition of such identified data packets in the access node,  
5 the access node initiates the offering of at least one further transmission channel. The access node produces the release of at least one such additionally offered transmission channel when no data packets identified with such a traffic information arrive at and are recognized in the access node within a defined time duration.

The above-described scenarios should be viewed not only in isolation, but  
10 possibly as combined with one another. For example, a subscriber would like to request a plurality of services simultaneously from the computers of the service vendors. The offering of an additional transmission channel for the data of a first requested service can, for example, be occasioned by the data packets with the exclusive signaling function mentioned in the first scenario. For another requested  
15 service, an additional transmission channel can be offered on the basis of the payload packet mentioned in the second scenario that is identified with a traffic information. The decision about how many additional transmission channels are made available occurs either on the basis of a separate evaluation of the traffic information in a data packet with the exclusive signaling function and the traffic  
20 information in the header of a payload packet or on the basis of an evaluation in common of all traffic information available in the access node.

Furthermore, the inventive method can run parallel to further methods, preferably the initially cited multi-link protocol or the AO/DI technique, or can be combined with them analogous to that set forth above. In particular, the inventive  
25 method does not preclude that an action by a subscriber triggers the offering of at least one additional transmission channel or the release of at least one such channel. This applies, for example, when a subscriber would like to use a transmission channel that is already occupied for the transmission of data belonging to a requested service for telephoning.

30 Additionally, the data packets separately identified with a traffic information can influence the charge assessment of the additionally offered transmission channels.

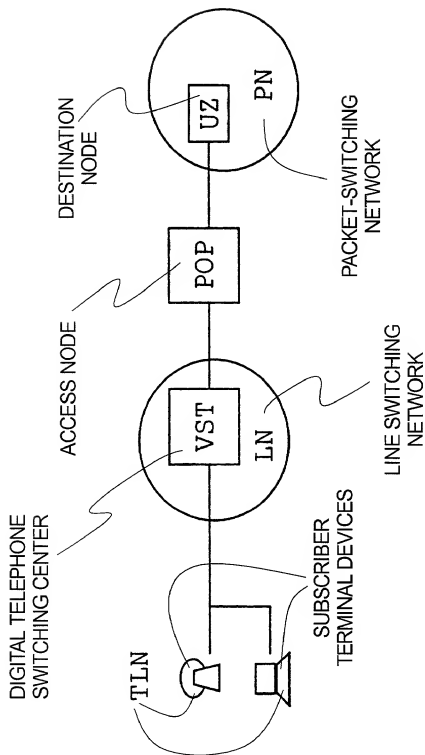
Instead of billing the subscriber that requests a service for the charges of the additionally offered transmission channel, another party (for example, the service vendor) can partly or entirely assume the charges.

The above-described method is illustrative of the principles of the present invention. Numerous modifications and adaptations thereof will be readily apparent to those skilled in this art without departing from the spirit and scope of the present invention.

## ABSTRACT

An access node (POP) to the packet-switching network (PN) that is connected to a digital telephone switching center (VST) of a line-switching network (LN) recognizes the data packets separately identified with a traffic information among the incoming data packets. In conformity with the traffic information, it initiates the offering of at least one additional transmission channel for the purpose of a connection with at least one existing transmission channel to form a common transmission link between the access node and at least one such subscriber terminal device or private branch exchange.

1/1



# Declaration and Power of Attorney For Patent Application

## Erklärung Für Patentanmeldungen Mit Vollmacht

### German Language Declaration

Als nachstehend benannter Erfinder erkläre ich hiermit an Eides Statt:

As a below named inventor, I hereby declare that.

dass mein Wohnsitz, meine Postanschrift, und meine Staatsangehörigkeit den im Nachstehenden nach meinem Namen aufgeführten Angaben entsprechen,

My residence, post office address and citizenship are as stated below next to my name,

dass ich, nach bestem Wissen der ursprüngliche, erste und alleinige Erfinder (falls nachstehend nur ein Name angegeben ist) oder ein ursprünglicher, erster und Miterfinder (falls nachstehend mehrere Namen aufgeführt sind) des Gegenstandes bin, für den dieser Antrag gestellt wird und für den ein Patent beantragt wird für die Erfindung mit dem Titel:

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

Verfahren zur Steuerung der Bereitstellung  
mindestens eines zusätzlichen Übertra-  
gungskanals als Zugang zu einem paket-  
vermittelnden Netz

deren Beschreibung

the specification of which

(zutreffendes ankreuzen)

(check one)

☒ hier beigefügt ist.

☐ is attached hereto.

☐ am \_\_\_\_\_ als

☐ was filed on \_\_\_\_\_ as

PCT internationale Anmeldung

PCT international application

PCT Anmeldungsnummer \_\_\_\_\_

PCT Application No. \_\_\_\_\_

eingereicht wurde und am \_\_\_\_\_

and was amended on \_\_\_\_\_

abgeändert wurde (falls tatsächlich abgeändert).

(if applicable)

Ich bestätige hiermit, dass ich den Inhalt der obigen Patentanmeldung einschliesslich der Ansprüche durchgesehen und verstanden habe, die eventuell durch einen Zusatzantrag wie oben erwähnt abgeändert wurde.

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims as amended by any amendment referred to above.

Ich erkenne meine Pflicht zur Offenbarung irgendwelcher Informationen, die für die Prüfung der vorliegenden Anmeldung in Einklang mit Absatz 37, Bundesgesetzbuch, Paragraph 1.56(a) von Wichtigkeit sind, an.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56(a).

Ich beanspruche hiermit ausländische Prioritätsvorteile gemäss Abschnitt 35 der Zivilprozessordnung der Vereinigten Staaten, Paragraph 119 aller unten angegebenen Auslandsanmeldungen für ein Patent oder eine Erfindersurkunde, und habe auch alle Auslandsanmeldungen für ein Patent oder eine Erfindersurkunde nachstehend gekennzeichnet, die ein Anmeldedatum haben, das vor dem Anmeldedatum der Anmeldung liegt, für die Priorität beansprucht wird.

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

09762423.022601



# German Language Declaration

Prior foreign applications  
Priorität beansprucht

Priority Claimed

198 39 020.3 Germany 27. August 1998  
(Number) (Country) (Day Month Year Filed)  
(Nummer) (Land) (Tag Monat Jahr eingereicht)

☒ ☐  
Yes No  
Ja Nein

(Number) (Country) (Day Month Year Filed)  
(Nummer) (Land) (Tag Monat Jahr eingereicht)

☐ ☐  
Yes No  
Ja Nein

(Number) (Country) (Day Month Year Filed)  
(Nummer) (Land) (Tag Monat Jahr eingereicht)

☐ ☐  
Yes No  
Ja Nein

Ich beanspruche hiermit gemäss Absatz 35 der Zivilprozessordnung der Vereinigten Staaten, Paragraph 120, den Vorzug aller unten aufgeführten Anmeldungen und falls der Gegenstand aus jedem Anspruch dieser Anmeldung nicht in einer früheren amerikanischen Patentanmeldung laut dem ersten Paragraphen des Absatzes 35 der Zivilprozessordnung der Vereinigten Staaten, Paragraph 122 offenbart ist, erkenne ich gemäss Absatz 37, Bundesgesetzbuch, Paragraph 1.56(a) meine Pflicht zur Offenbarung von Informationen an, die zwischen dem Anmeldedatum der früheren Anmeldung und dem nationalen oder PCT internationalen Anmeldedatum dieser Anmeldung bekannt geworden sind.

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §122, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application.

(Application Serial No.)  
(Anmeldeseriennummer)

(Filing Date)  
(Anmeldedatum)

(Status)  
(patentiert, anhängig,  
aufgegeben)

(Status)  
(patented, pending,  
abandoned)

(Application Serial No.)  
(Anmeldeseriennummer)

(Filing Date)  
(Anmeldedatum)

(Status)  
(patentiert, anhängig,  
aufgeben)

(Status)  
(patented, pending,  
abandoned)

Ich erkläre hiermit, dass alle von mir in der vorliegenden Erklärung gemachten Angaben nach meinem besten Wissen und Gewissen der vollen Wahrheit entsprechen, und dass ich diese eidesstattliche Erklärung in Kenntnis dessen abgebe, dass wesentlich und vorsätzlich falsche Angaben gemäss Paragraph 1001, Absatz 18 der Zivilprozessordnung der Vereinigten Staaten von Amerika mit Geldstrafe belegt und/oder Gefängnis bestraft werden können, und dass derartig wesentlich und vorsätzlich falsche Angaben die Gültigkeit der vorliegenden Patentanmeldung oder eines darauf erteilten Patentes gefährden können.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

# German Language Declaration

VERTRETUNGSVOLLMACHT: Als benannter Erfinder beauftrage ich hiermit den nachstehend benannten Patentanwalt (oder die nachstehend benannten Patentanwälte) und/oder Patent-Agenten mit der Verfolgung der vorliegenden Patentanmeldung sowie mit der Abwicklung aller damit verbundenen Geschäfte vor dem Patent- und Warenzeichenamt: (Name und Registrationsnummer anführen)

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. (list name and registration number)

Messrs. John D. Simpson (Registration No. 19,842) Lewis T. Steadman (17,074), William C. Stueber (16,453), P. Phillips Connor (19,259), Dennis A. Gross (24,410), Marvin Moody (16,549), Steven H. Noll (28,982), Brett A. Valiquet (27,841), Thomas I. Ross (29,275), Kevin W. Guynn (29,927), Edward A. Lehmann (22,312), James D. Hobart (24,149), Robert M. Barrett (30,142), James Van Santen (16,584), J. Arthur Gross (13,815), Richard J. Schwarz (13,472) and Melvin A. Robinson (31,870), David R. Metzger (32,919), John R. Garrett (27,888) all members of the firm of Hill, Steadman & Simpson, A Professional Corporation.

And I hereby appoint

Telefongespräche bitte richten an:  
(Name und Telefonnummer)

Direct Telephone Calls to: (name and telephone number)

312/876-0200

Ext. \_\_\_\_\_

Postanschrift:

Send Correspondence to:

HILL, STEADMAN & SIMPSON  
A Professional Corporation  
85th Floor Sears Tower, Chicago, Illinois 60606

Voller Name des einzigen oder ursprünglichen Erfinders: <b>PREHOFFER, Christian</b>		Full name of sole or first inventor:	
Unterschrift des Erfinders <i>Christian Prehoffer</i>	Datum 25/8/89	Inventor's signature	Date
Wohnsitz D-81477 München, Germany DEX		Residence	
Staatsangehörigkeit Bundesrepublik Deutschland		Citizenship	
Postanschrift Wengleinstr. 7		Post Office Address	
D-81477 München Bundesrepublik Deutschland			
Voller Name des zweiten Miterfinders (falls zutreffend):		Full name of second joint inventor, if any:	
Unterschrift des Erfinders	Datum	Second Inventor's signature	Date
Wohnsitz		Residence	
Staatsangehörigkeit		Citizenship	
Postanschrift		Post Office Address	

(Bitte entsprechende Informationen und Unterschriften im Falle von dritten und weiteren Miterfindern angeben).

(Supply similar information and signature for third and subsequent joint inventors).

**BOX PCT  
IN THE UNITED STATES DESIGNATED/ELECTED OFFICE  
OF THE UNITED STATES PATENT AND TRADEMARK OFFICE  
UNDER THE PATENT COOPERATION TREATY-CHAPTER II**

**CHANGE OF ADDRESS OF APPLICANTS' REPRESENTATIVE**

APPLICANT(S): CHRISTIAN PREHOFER  
ATTORNEY DOCKET NO.: P01,0024  
INTERNATIONAL APPLICATION NO: PCT/DE99/02675  
INTERNATIONAL FILING DATE: 26 AUGUST 1999  
INVENTION: METHOD FOR CONTROLLING THE OFFERING OF AT LEAST ONE  
ADDITIONAL TRANSMISSION CHANNEL AS ACCESS TO A PACKET-  
SWITCHING NETWORK

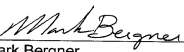
Assistant Commissioner for Patents,  
Washington D.C. 20231

S I R:

Members of the firm of Hill & Simpson designated on the original Power of Attorney have merged into the firm of Schiff Hardin & Waite. All future correspondence for the above-referenced application therefore should be sent to the following address:

**SCHIFF HARDIN & WAITE  
Patent Department  
6600 Sears Tower  
233 South Wacker Drive  
Chicago, Illinois 60606-6473  
CUSTOMER NUMBER 26574**

Submitted by,

  
\_\_\_\_\_  
(Reg. No. 45,877)  
Mark Bergner  
SCHIFF HARDIN & WAITE  
Patent Department  
6600 Sears Tower  
Chicago, Illinois 60606-6473  
Telephone: (312) 258-5779  
Attorneys for Applicants  
**CUSTOMER NUMBER 26574**

09762423.022601